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Rockwell Collins
Office of the General Counsel
400 Collins Rd. NE M/S 124-323
Cedar Rapids, IA 52498

To:	Mail Stop: AF	From:	Sheila Mathews
Location:	US Patent Office	Location:	124-323
Fax:	571-273-8300	Fax:	319-295-8777
Tel:		Tel:	319-295-4862
Pages:	44 (including Lead)	Date:	June 3, 2008

Applicant: Mabe et al.
Serial No. 10/811,000
Filed: March 26, 2004
Docket No.: 03CR119/KE
For: Network Routing Process For Regulating Traffic Through Advantaged And Disadvantaged Nodes
Item: Appeal Brief comprising of 39 pages, Transmittal of Appeal Brief comprising of 2 pages (in duplicate)

Sheila Mathews
Sheila K. Mathews

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Practitioner's Docket No. 03CR119/KE ***PATENT***

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Fred D. Mabe et al.

Application No.: 10/811,000 Group No.: 2616
Filed: 03/26/2004 Examiner: C. Patel
For: Network Routing Process For Regulating Traffic Through Advantaged And Disadvantaged Nodes

Mail Stop Appeal Briefs – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION--37 C.F.R. § 41.37)

1. Transmitted herewith, is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on April 3, 2008.

2. STATUS OF APPLICANT

This application is on behalf of other than a small entity.

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*
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* *Only the date of filing (' 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under ' 1.8 continues to be taken into account in determining timeliness. See ' 1.703(f). Consider "Express Mail Post Office to Addressee" (' 1.10) or facsimile transmission (' 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.*

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3. FEE FOR FILING APPEAL BRIEF

Pursuant to 37 C.F.R. § 41.20(b)(2), the fee for filing the Appeal Brief is:

other than a small entity	$510.00
Appeal Brief fee due	**$510.00**

4. EXTENSION OF TERM

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

5. TOTAL FEE DUE

The total fee due is:

Appeal brief fee	$510.00
Extension fee (if any)	$0.00
TOTAL FEE DUE	**$510.00**

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7. FEE DEFICIENCY

If any additional extension and/or fee is required, and if any additional fee for claims is required, charge Deposit Account No. 18-1722.

Date: 6/3/2008

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Customer No.: 26383

Kyle Eppele
Signature of Practitioner
Kyle Eppele
Rockwell Collins, Inc.
400 Collins Road NE M/S 124-323
Cedar Rapids, IA 52498

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Fred D. Mabe et al.

Application No.: 10/811,000 Group No.: 2616
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The total fee due is:

Appeal brief fee	$510.00
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Customer No.: 26383

Kyle Eppele
Signature of Practitioner
Kyle Eppele
Rockwell Collins, Inc.
400 Collins Road NE M/S 124-323
Cedar Rapids, IA 52498

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In re Application of:	§	Group Art Unit: 2616
	§	
Fred D. Mabe, et al.	§	Examiner: C. Patel
	§	
Application No: 10/811,000	§	Attorney Docket: 03CR119/KE
	§	
Filed: March 26, 2004	§	
	§	
For: Network Routing Process For Regulating Traffic Through Advantaged And Disadvantaged Nodes	§ § §	

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Sheila K Mathews
(Signature)

6/3/08
(Date of Deposit)

APPLICANTS' BRIEF ON APPEAL TO THE BOARD

This is an appeal from the final rejection of the Examiner dated January 4, 2008, rejecting all claims pending in the case. This Brief is accompanied by the requisite fee set forth in §41.20(b)(2).

PAGE 6/44 * RCVD AT 6/3/2008 10:02:12 AM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/34 * DNIS:2738300 * CSID:319 295 8777 * DURATION (mm-ss):11-42

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REAL PARTY IN INTEREST

The real party in interest in this appeal is the assignee, Rockwell Collins Inc.

RELATED APPEALS AND INTERFERENCES

The application on appeal is not subject to, or an element in, any other appeal or interference proceeding within the U.S. Patent and Trademark Office.

STATUS OF CLAIMS

Claims 1-22 are pending, have been rejected and are all on appeal.

STATUS OF AMENDMENTS

No amendments to the claims or the specification have been filed subsequent to the final rejection dated January 4, 2008.

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SUMMARY OF THE CLAIMED SUBJECT MATTER

Without limiting the claims on appeal, the independent claims of the invention are summarized below:

Claim 1:

A process used as part of a routing protocol comprising the steps of:

a) having a plurality of nodes exchange routing advertising messages, including routing pathways through the network, including one or more metrics defining message transfer costs (see page 3, lines 1-9; NOTE: this step is well known in the prior art);

b) having one of SAID nodes (itself) CHECK TO DETERMINE if it comprises an advantaged node which MAY experience heavy network traffic, POTENTIALLY leading to traffic congestion (see page 6, lines 25-27, the last paragraph at the bottom of the page);

c) having an advantaged node (itself) ADJUST one of the metrics of a plurality of routing pathways through SAID node entered into a routing to from an updated routing table (see page 7, lines 7-21);

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d) having THIS updated routing table including adjusted metrics ADVERTISED across SAID network FOR THE PURPOSE of updating the routing tables or other nodes in the network (see page 9, lines 5-10, the first full paragraph of the page and immediately before Table 4);

Claim 4:

The process of claim 2, wherein:

said routing protocol comprises a link state protocol and said metric comprises latency. (See page 14 lines 18-24)

Claim 5:

A process for use as part of a routing protocol in communications network featuring differentiated services wherein the network (see Fig. 4, item 50) is comprised of a plurality of nodes, each of which includes a router having (see page 10, lines 12-17); multidimensional routing information reflecting different code-point levels and defining;

routing pathways through said network for each code-point and one or more metrics;

defining message transfer characteristics for each such routing pathway for each code-point (see page 10, lines 20-23 and page 11, lines 1-15);

comprising the steps of:

a) having a plurality of said nodes exchange routing advertisement messages, including routing pathways for each code-point through said network and including one or more metrics defining message transfer costs for each routing pathway (see page 10, lines 20-23 and page 11, lines 1-15);

b) having one of said nodes check to determine if it comprises an advantaged node which may experience heavy network traffic, potentially leading to network communications traffic congestion (see page 11, lines 16-20);

c) having an advantaged node increase one or more of the metrics of a plurality of routing pathways through said node entered into a routing table by amounts based on the code-point of the entry to form an updated routing table (see page 11, lines 21-end); and

d) having said updated routing table advertised across said network for the purpose of updating the routing tables of other network nodes (see page 12 lines 1-8).

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Claim 9:

A process for use as part of a routing protocol in a mobile ad hoc digital communications network composed of a plurality of nodes, each of which includes a router having a routing table including routing information defining routing pathways through said network, and one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) having a plurality of said nodes exchange routing information, including routing pathways through said network and one or more metrics defining message transfer costs for each routing pathway (see page 3, lines 1-9; NOTE: this step is well known in the prior art);

b) having one of said nodes calculate a measure of the degree to which it comprises an advantaged node (see page 7, lines 4-6);

c) having an advantaged node increase one or more of the metrics of a plurality of pathways through said node entered into its routing table to form an updated routing table as a function of said measure of the degree to which it comprises an advantaged node (see page 14, lines 1-9); and

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d) having said updated routing table, including adjusted metrics advertised across said network for the purpose of updating the routing tables of other network nodes (see page 9, lines 5-10, the first full paragraph of the page and immediately before Table 4).

Claim 13:

A process for use as part of a routing protocol in a mobile ad hoc digital communications network comprising of a plurality of nodes each of which includes a router having a routing table including routing information defining routing pathways through said network and including one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) having a plurality of said nodes exchange routing advertisement messages including routing pathways through said network and one or more metrics defining message transfer cost metrics for each routing pathway (see page 12, lines 1-8);

b) having one or more of said nodes check to determine if they comprise partially disadvantaged nodes (see page 3, lines 12-14);

c) having a partially disadvantaged node increase one or more of the metrics of a plurality of routing pathways through said node entered into a routing table by a

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substantial amount in order to discourage all but essential traffic through said node and form an updated routing table (see page 3, lines 14-21); and

d) having said updated routing table advertised across said network for the purpose of updating the routing tables of other network nodes (see page 3, lines 21-28).

Claim 14

The process of claim 13, wherein:

the step of having each node check to determine if it comprises a partially disadvantaged node includes the step of having the node check its available power reserves as a basis for determining if it may be a partially disadvantaged node. (See page 3 lines 10-15)

Claim 17:

A process for use as part of a routing protocol in a mobile ad hoc digital communications network composed of a plurality of nodes each of which includes a router having a routing table defining routing pathways through said network and including one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

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a) exchanging routing information between a plurality of said network nodes including routing pathways through said network and one or more metrics defining message transfer costs for each routing pathway (see page 3, lines 1-9; NOTE: this step is well known in the prior art);

b) generating a measure the degree to which one of said nodes may comprise an advantaged node which may experience unduly heavy network communications traffic (see page 7, lines 4-6);

c) adjusting one or more of the metrics of a plurality of routing pathways through said node as entered into its routing table as a function of said measure of the degree to which the node is an advantaged node to form an updated routing table to be used for advertising routing information (see page 14, lines 1-9); and

d) advertising said updated routing table including adjusted metrics across said network for the purpose of updating the routing tables of other network nodes (see page 9, lines 5-10, the first full paragraph of the page and immediately before Table 4).

Claim 20:

A process for use as part of a routing protocol in an ad hoc digital communications network featuring differentiated services wherein the network is comprised of a plurality

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of nodes each of which includes a router having multidimensional routing information reflecting different code-point levels and defining routing pathways through said network according to code-point and including one or more metrics defining message transfer characteristics for each routing pathway according to code-point, comprising the steps of:

a) exchanging routing information between a plurality of said nodes including routing pathways for each code-point through said network and including one or more metrics defining message transfer costs for each routing pathway (see page 3, lines 1-9; NOTE: this step is well known in the prior art);

b) determining if a node comprises an advantaged node which may experience heavy network traffic potentially leading to network congestion (see page 11, lines 16-20);

c) adjusting one or more of the metrics for a plurality of routing pathways through an advantaged node as entered into its routing table by amounts based on the code-point level of the entry to form an updated routing table (see page 11, lines 21-end); and

d) advertising said updated routing table including adjusted metrics across said network for the purpose of updating the routing tables of other nodes in the network (see page 9, lines 5-10, the first full paragraph of the page and immediately before Table 4).

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GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

1. Whether claims 1, 5, 9, 13, 17 and 20 have been properly rejected under 35 U.S.C. §102(e) as being anticipated by Goringe et al., U.S. Patent No. 7,200,122.

2. Whether claims 2, 3, 6, 7, 10, 11, 15, 18, 19, 21 and 22 have been properly rejected under 35 U.S.C. §103(a) as being unpatentable over Goringe in view of Elliott, U.S. Patent No. 7,139,262.

3. Whether claim 4 has been properly rejected under 35 U.S.C. 103(a) as being unpatentable over Goringe and in view of Elliott and additionally in view of Kao, U.S. Patent No. 7,212,490

4. Whether claims 8, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goringe et al. in view of Kao.

5. Whether claim 14 has been properly rejected under 35 U.S.C. §103(a) as being unpatentable over Goringe in view of Sholander, U.S. Patent No. 7,177,295.

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ARGUMENT

1. Whether claims 1, 5, 9, 13, 17 and 20 have been properly rejected under 35 U.S.C. §102(e) as being anticipated by Goringe et al., U.S. Patent No. 7,200,122.

Claims 1, 5 and 20:

The Goringe '122 reference fails to anticipate claims 1, 5 and 20 because it fails to teach each and every limitation of the claim.

The Goringe reference does not teach:

> "b) having one of said nodes check to determine if it
> comprises an advantaged node …
>
> c) having an advantaged node adjust one of the metrics of a
> plurality of routing pathways through said node.."

Goringe 1) does nothing to mitigate the problems of advantaged nodes; 2) does not identify or even mention advantaged and/or disadvantaged nodes by those names or any other name -- even as a mere concept; 3) is a PASSIVE OBSERVER and does not in any way modify the routing in the network.

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The Examiner clings to the notion that border routers are advantaged nodes. The function of border routers is well known, and, as well, is explained in Goringe. A border router might or might not, incidentally, be an advantaged node. However, Goringe does NOT teach having a node ***check itself to determine if it is an advantaged node.*** Each and every word in the claim must be considered. To ignore this notion that a node must check itself to determine its own status is improperly ignoring a key limitation to the claimed invention. Moreover, section c of Claims 1 and 5 include the limitation to "having ***the advantaged node*** ADJUST one of the metrics of a plurality of routing pathways THROUGH SAID NODE…" (EMPHASIS ADDED). Again, Goringe is a Passive Observer, and it does not teach ADJUSTING a metric of anything, let alone having the node adjust.

In response to the Examiner's rejection on this point, the Applicants would like to rebut the Examiner by stating:

Examiner Patel incorrectly equates Goringe, Col. 7, lines 39 to 57 and Figure 3 and steps 324 and 328 with the following claim language:

> *"… having an advantaged node adjust one of the metrics of a plurality of routing pathways through said node…."*

Examiner Patel is wrong. The cited parts of Figure 3 and corresponding text of Goringe are deep within the Goringe mechanization and relate to keeping track of which

information has already been retrieved from a border router. In particular, this process does not take place within the border router, but rather deep within the invention of Goringe. No reference is made to metrics. No metrics are changed. No change of any kind is made in any routing table. In the referenced figure, which is a flowchart, deep within Goringe, steps 324 and 328 are the steps of "ADD NETWORK ADDRESS FOR EACH ROUTER TO ROUTER TABLE" and "Add LINKS to LINK TABLE." As Goringe receives information via SNMP on the network, these are parts to the means by which Goringe keeps track of IP addresses of routers and links between routers. Adding information to Goringe's table, which is not part of a router, is not remotely the same as Claims 1, 5 and 20 part c), in which an advantaged node modifies the cost metric of a link in its own routing table, and then in d) publishes this information to other routers as part of the normal routing process.

Claims 9 and 17:

Claims 9 and 17 include the same notions for claim sections b and c as for 1, 5 and 20 except that they include the additional notion of determining the degree to which a node determines itself to be advantaged. Moreover, claims 9 and 17 include the additional limitations to adjusting a metric as a function of the degree it found itself to be advantaged. In other words, since Goringe doesn't teach a node self-determining an advantaged status, it is impossible for it to teach determining the **degree** of an advantaged

status. This is a compounding of omitted teachings from the Goringe reference, and Claims 9 and 17 are believed to be allowable.

Claim 13:

Claim 13 includes sections b and c which are based upon partially disadvantaged nodes instead of advantaged nodes. Goringe also fails to teach having a node self-determine if it is partially disadvantaged. Column 4, lines 6-33, does not mention dis-advantaged nodes, nor does it suggest or imply disadvantaged nodes. Moreover, this cited section of Goringe does not teach a node self determining whether it is disadvantaged or, therefore, even further cannot teach a self-determined disadvantaged node to adjust a metric to update a routing table for the node.

2. Whether claims 2, 3, 6, 7, 10, 11, 15, 18, 19, 21 and 22 have been properly rejected under 35 U.S.C. §103(a) as being unpatentable over Goringe et al. in view of Elliott, U.S. Patent No. 7,139,262.

Claims 2, 3, 6, 10, 11, 18 and 21:

First of all, the obviousness rejection based upon Goringe is improper as Goringe is non-analogous art.

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Goringe does not solve the same problem, nor is it even directed to the same problem as the present invention.

Below is a summary of purpose and problems solved by the present invention (Mabe) as contrasted with the purpose and problems solved by Goringe

The mechanism of the Mabe application is an ACTIVE part of the routing system itself, which identifies Advantaged and/or Disadvantaged nodes, and which ACTIVELY modifies the routing system by making "artificial" changes in routing costs designed to cause non-critical traffic to be routed around advantaged and disadvantaged nodes.

In Mabe, this all takes place in a de-centralized, cooperative fashion appropriate for ad hoc networks and distributed routing protocols. In a network, an advantaged node is a good thing when not overloaded. But an advantaged node can attract too much traffic because of its favorable position in the network. The node thus suffers overloading, and the traffic can suffer excessive delay. A disadvantaged node also suffers from too much traffic. A disadvantaged node may have, for example, a low battery. In another example, it may be a "fast-mover" available only for a short time, for which network routing should not be changed.

In Mabe, when a node ITSELF recognizes the network is suffering from the node being advantaged or disadvantaged, then that node ITSELF ACTIVELY artificially modifies the routing costs of its connected links, in some cases only for certain priorities

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of messages. As this information propagates through the normal routing protocol, unwanted traffic is routed on some other path, if there is another path.

In contrast, Goringe is a PASSIVE OBSERVER of the network routing system. Goringe intends to create an "accurate detailed map of the network" for a centralized network management system (see Goringe Col. 2, lines 7-9). "The discovery of network topology is not a simple task for network administrators" (Goringe, Col. 2, lines 21-22).

Goringe provides a common collection point at which routing table information is collected from the network by contacting various routers. Goringe cites OSPF as routing protocol which provides a defined interface to the well-known Simple Network Management Protocol (SNMP). Goringe admits that in OSPF, as a link state system, if there are only two autonomous regions, all this information is present in any one border router. (Goringe, Col. 4, lines 23-33).

Goringe then provides a very, very detailed software implementation of techniques which presumably correctly, and efficiently, piece this information together when the routing system does not conveniently do Goringe's job for him. As mentioned by Goringe, such a case is DSDV in which each router in a region does not have a complete link state map of the entire network.

Goringe 1) does nothing to mitigate the problems of Advantaged and Disadvantaged nodes addressed by Mabe. Goringe 2) does not identify or even mention

advantaged and/or disadvantaged nodes by those names or any other name -- even as a concept. Goringe 3) is a PASSIVE observer and does not in any way modify the routing in the network for any purpose including Mabe's purposes. Recognizing any one of these three facts would make Goringe non-analogous art and would thereby eliminate Goringe as a reference against Mabe.

Claim 2 includes the limitation which modifies the step of having each node check to determine if it comprises an advantaged node and further includes the step of having the node calculate a ratio of the node's neighbors to the average number of its neighbors' neighbors. Claims 3, 4, 6, 10, 11, 18 and 21 either include similar limitations or depend from claim 2 or another claim including similar limitations.

The Examiner cites Column 7, lines 41-56 of Elliott as teaching this:

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FIG. 11 is a flowchart of processing, consistent with the present invention, for selecting the N best nodes in a network neighborhood. The node 210 begins by setting a variable, I, equal to 1 [step 1110]. The node 210 then takes each node in its neighbor table 720 and finds that node in its routing table 710 [step 1120]. The node 210 extracts the current metric for that node from the routing table 710 [step 1130]. The node 210 selects the node with the largest metric (i.e., the node that is the largest number of hops away) [step 1140] and forms a network neighbor relationship with that node [step 1150]. In essence, the node 210 selects the node that is the farthest away, since forming a direct neighbor relationship with that node will have the greatest effect on reducing the network diameter. In other implementations consistent with the present invention, the node 210 selects two or more nodes based on their metrics.

As it can be seen, Elliott, U.S. Patent No. 7,139,262 Col 7, lines 41-56, has nothing to do with calculating the ratio of the number of one's neighbors to the average of the number of one's neighbors' neighbors. Elliott has nothing to do with the same problem; i.e., advantaged nodes, and calculates no ratios in the passage cited by the Examiner for any purpose -- all contrary to the allegations of the Examiner.

In fact, Elliot addresses the well-known dilemma present in an ad hoc radio network: Should the user use a single high-power transmission to transmit the packet as far as possible, knowing that the high power transmission will deny service to others over

a large area? Or, alternatively, should the user use a series of low-power transmissions in which the packet is forwarded by one near neighbor to another through many nodes, so that each transmission denies service only to a few users, but in which the user's packet will experience a long delay? Elliott offers six techniques which he views as compromises between these two extremes, some of which involve directional antennas. However, none of Elliott's techniques address the problem addressed in the present invention in which advantaged nodes can attract too much traffic, causing excessive queuing delays, and disadvantaged nodes cannot avoid traffic which, for example, depletes their limited resources.

Elliott is not analogous art as it does not solve the same problem as the present invention. It is improper (and insufficient) to combine Elliott with Goringe. However, even if the two references are combined, they fail to teach the claimed combination. Goringe fails to teach the items discussed above with respect to the 102 rejection, and Elliott is not even cited as teaching the shortcomings of Goringe as making the 102 rejections in the last office action.

Claims 7 and 15:

Claims 7 and 15 are claims which depend from independent claims 5 and 13 respectively, and add a DSDV protocol, without claiming the specific method of modifying the link metric or that the link metric is just hop-count.

These dependent claims claim the important specific case of modifying the important DSDV protocol. The Examiner points out that Goringe mentions DSDV in Column 1, lines 46-53. Oddly, Goringe does not in fact mention DSDV specifically, but rather refers generically to distance-vector algorithms. But importantly, of course, Goringe is going to mention link-state and distance-vector as the two most important generic pro-active routing algorithms.

Goringe's mention of distance-vector as a routing protocol from which he claims the right to PASSIVELY gather information for his invention, in no way teaches or suggests identifying advantaged nodes and then ACTIVELY modifying DSDV link cost metrics to divert traffic around advantaged nodes; i.e., Goringe's use of DSDV is for a different purpose, and it is improper to claim that it would be obvious to solve a completely different problem than is addressed by Goringe.

Claims 7 and 15 are believed to add additional matter not taught by Goringe, and, therefore, have further patentable subject matter beyond the claims from which they depend.

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3. Whether claim 4 has been properly rejected under 35 U.S.C. §103(a) as being unpatentable over Goringe and in view of Elliott and additionally in view of Kao U.S. Patent No. 7,212,490.

Claim 4 is dependent on claim 2, which in turn is dependent on independent claim 1. Claim 2 adds the neighbors to neighbors' neighbors ratio test to determine advantaged nodes. Claim 4 adds the use of a non-hop count metric, namely latency. Latency would normally be associated with link speed, but it could also be associated with queuing time. We have made our arguments with respect to claim 3 above. Claim 3 is structurally similar to claim 4, but it adds DSDV and "incrementing" as a means of artificially adjusting hop counts.

The Examiner cites Kao (U.S. Patent No. 7,212,490) as additional prior art. Examiner cites the abstract of Kao as evidence that latency as a metric is prior art. The Examiner notes that Col. 3, lines 48-57 [of Kao] mentions latency as a metric. At the top of page 11, the Examiner states:

> "It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have transfer cost based on latency so that congestion between nodes can be determined, citing Col. 3, lines 48-57 (of Kao)".

The Examiner does not cite Kao as teaching bolstering the 102 or 103 cases as

applied to claim 1. Since claim 4 includes all of the limitations of claim 1, and Kao is not even cited as teaching the shortcomings of Goringe as anticipating claim 1, the combination of Goringe and Kao cannot make a prima facie case of obviousness with respect to claim 4; i.e., all of the arguments made above with respect to Goringe failing to anticipate claim 1 are applicable with respect to claim 4, and they are repeated here by this reference.

Additionally, for the reasons given above with respect to the 2nd Ground for Rejection, i.e., Goringe is non-analogous art, it is inappropriate to base any section 103 rejection upon Goringe.

Allowance of dependent claim 4 is, therefore, appropriate.

4. Whether claims 8, 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goringe et al. in view of Kao.

Claims 8, 12, and 16 depend from claims 5, 9, and 13 respectively. The Examiner does not cite Kao as teaching bolstering the 102 or 103 cases as applied to claims 5, 9 and 13. Since these dependent claims, as a matter of law, include all of the limitations of the claims from which they depend, and Kao is not even cited as teaching the shortcomings of Goringe at anticipating the claims from which they depend, the combination of Goringe and Kao cannot make a prima facie case of obviousness with respect to claims 8,

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12 and 16; i.e., all of the arguments made above with respect to Goringe failing to anticipate claims 5, 9 and 13 are applicable with respect to claims 8, 12 and 16, and they are repeated here by this reference.

Additionally, for the reasons given above with respect to the second Ground for Rejection, i.e. Goringe is non-analogous art, it is inappropriate to base any section 103 rejection upon Goringe.

Allowance of dependent claims 8, 12 and 16 is, therefore, appropriate.

5. Whether claim 14 has been properly rejected under 35 U.S.C. §103(a) as being unpatentable over Goringe in view of Sholander, U.S. Patent No. 7,177,295.

Claim 14 introduces the important special case of having a node check to see if it is a disadvantaged node by checking its power reserves.

The Examiner relies on Sholander for the prior art notion of power reserves as a metric. The Examiner cites Column 8, lines 9-22 to teach this proposition. Again, the Examiner errs.

Below is the cited section of Sholander:

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error rate. Finally, many MANET nodes are hand-held, battery-operated devices with limited power. Therefore, many non-traditional QoS metrics, such as associativity, signal stability, error rate, power levels and location are used in addition to traditional QoS metrics such as the hop count, delay, and bandwidth of the channel. The QoS metric is selected at the time the network is configured. Alternatively, the user at the node level may select the QoS metric.

Each node within the routing zone 105 sends out the changes in the status of connections with its neighbors to all the other nodes within the routing zone 105. The other nodes, upon receipt of any changes in the topology information (e.g., connectivity and/or QoS information), re-compute the shortest path to the other nodes in the routing zone.

It can be seen that the Examiner clearly misreads and mischaracterizes Col. 8, lines 9-22, when the Examiner stated the following in section 7 of the final office action:

Sholander teaches the node checks its available power reserves as a basis for determining if it may be a partially disadvantaged node [Col. 8, lines 9-22].

Additionally, for the reasons given above with respect to the 2nd Ground for Rejection, i.e. Goringe is non-analogous art, it is inappropriate to base any section 103 rejection upon Goringe.

The rejection of Claim 14 is improper.

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Allowance of claims 1-23 is respectfully requested.

CONCLUSION

The Applicants respectfully submit that Goringe does not anticipate any of the claims because it does not teach a node self-determining whether it is advantaged and then self-adjusting a metric. The other cited references are not even cited as teaching the shortcomings of Goringe in anticipating the independent claims.

The Applicants believe that the application should be allowed.

Respectfully submitted,

Kyle Eppele

Kyle Eppele
Rockwell Collins Inc.
Intellectual Property Department
400 Collins Road NE M/S 124-323
Cedar Rapids, IA 52498

Date 6/3/2008

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CLAIMS APPENDIX

Claim 1 A process for use as part of a routing protocol in an ad hoc digital communications network wherein the network is comprised of a plurality of nodes each of which includes a router including a routing table having routing information defining routing pathways through said network and including one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) having a plurality of said nodes exchange routing advertisement messages including routing pathways through said network and including one or more metrics defining message transfer costs for each routing pathway;

b) having one of said nodes check to determine if it comprises an advantaged node which may experience heavy network traffic potentially leading to network communications traffic congestion;

c) having an advantaged node adjust one of the metrics of a plurality of routing pathways through said node entered into a routing table to form an updated routing table; and

d) having this updated routing table including adjusted metrics advertised across said network for the purpose of updating the routing tables of other nodes in the network.

Claim 2 The process of claim 1, wherein:

the step of having each node check to determine if it comprises an advantaged node includes the step of having the node calculate a ratio of the node's neighbors to the average number of its neighbors' neighbors as a basis for determining if it is an advantaged role.

Claim 3 The process of claim 2, wherein:

said routing protocol comprises a DSDV protocol and said metric comprises hop count, and

said step of adjusting one or more of the metrics of a plurality of routing pathways comprises incrementing the hop counts of said pathways.

Claim 4 The process of claim 2, wherein:

said routing protocol comprises a link state protocol and said metric comprises latency.

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Claim 5 A process for use as part of a routing protocol in an ad hoc digital communications network featuring differentiated services wherein the network is comprised of a plurality of nodes each of which includes a router having multidimensional routing information reflecting different code-point levels and defining routing pathways through said network for each code-point and one or more metrics defining message transfer characteristics for each such routing pathway for each code-point, comprising the steps of:

a) having a plurality of said nodes exchange routing advertisement messages including routing pathways for each code-point through said network and including one or more metrics defining message transfer costs for each routing pathway;

b) having one of said nodes check to determine if it comprises an advantaged node which may experience heavy network traffic potentially leading to network communications traffic congestion;

c) having an advantaged node increase one or more of the metrics of a plurality of routing pathways through said node entered into a routing table by amounts based on the code-point of the entry to form an updated routing table; and

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d) having said updated routing table advertised across said network for the purpose of updating the routing tables of other network nodes.

Claim 6 The process of claim 5, wherein:

the step of having each node check to determine if it comprises an advantaged node includes the step of having the node calculate a ratio of the node's neighbors to the average number of its neighbors' neighbors as a basis for determining if it is an advantaged node.

Claim 7 The process of claim 5, wherein:

said routing protocol comprises a DSDV protocol and said one or more metrics comprise hop count.

Claim 8 The process of claim 5, wherein:

said routing protocol comprises a link state protocol and said one or more metrics comprise latency.

Claim 9 A process for use as part of a routing protocol in a mobile ad hoc digital communications network composed of a plurality of nodes each of which includes a router having a routing table including routing information defining routing pathways

through said network and one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) having a plurality of said nodes exchange routing information including routing pathways through said network and one or more metrics defining message transfer costs for each routing pathway;

b) having one of said nodes calculate a measure of the degree to which it comprises an advantaged node;

c) having an advantaged node increase one or more of the metrics of a plurality of pathways through said node entered into its routing table to form an updated routing table as a function of said measure of the degree to which it comprises an advantaged node; and

d) having said updated routing table including adjusted metrics advertised across said network for the purpose of updating the routing tables of other network nodes.

Claim 10 The process of claim 9, wherein:

said measure of the degree to which a node comprises an advantaged node is based on based on a ratio of a node's neighbors to the average number of its neighbor nodes' neighbors.

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Claim 11 The process of claim 9, wherein:

said routing protocol comprises a DSDV protocol and said one or more metrics comprises hop count, and

said measure of the degree to which a node comprises an advantaged node is based on a ratio of a node's neighbors to the average number of its neighbor nodes' neighbors.

Claim 12 The process of claim 9, wherein:

said routing protocol comprises a link state protocol and said one or more metrics comprises latency.

Claim 13 A process for use as part of a routing protocol in a mobile ad hoc digital communications network comprising of a plurality of nodes each of which includes a router having a routing table including routing information defining routing pathways through said network and including one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) having a plurality of said nodes exchange routing advertisement messages including routing pathways through said network and one or more metrics defining message transfer cost metrics for each routing pathway;

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b) having one or more of said nodes check to determine if they comprise partially disadvantaged nodes;

c) having a partially disadvantaged node increase one or more of the metrics of a plurality of routing pathways through said node entered into a routing table by a substantial amount in order to discourage all but essential traffic through said node and form an updated routing table; and

d) having said updated routing table advertised across said network for the purpose of updating the routing tables of other network nodes.

Claim 14 The process of claim 13, wherein:

the step of having each node check to determine if it comprises a partially disadvantaged node includes the step of having the node check its available power reserves as a basis for determining if it may be a partially disadvantaged node.

Claim 15 The process of claim 13, wherein:

said routing protocol comprises a DSDV protocol and said one or more metrics comprise hop count.

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Claim 16 The process of claim 13, wherein:

said routing protocol comprises a link state protocol and said one or more metrics comprise latency.

Claim 17 A process for use as part of a routing protocol in a mobile ad hoc digital communications network composed of a plurality of nodes each of which includes a router having a routing table defining routing pathways through said network and including one or more metrics defining message transfer characteristics for each such routing pathway, comprising the steps of:

a) exchanging routing information between a plurality of said network nodes including routing pathways through said network and one or more metrics defining message transfer costs for each routing pathway;

b) generating a measure the degree to which one of said nodes may comprise an advantaged node which may experience unduly heavy network communications traffic;

c) adjusting one or more of the metrics of a plurality of routing pathways through said node as entered into its routing table as a function of said measure of the degree to which the node is an advantaged node to form an updated routing table to be used for advertising routing information; and

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d) advertising said updated routing table including adjusted metrics across said network for the purpose of updating the routing tables of other network nodes.

Claim 18 The process of claim 17, wherein:

said routing protocol comprises a DSDV type protocol and said one or more metrics comprises hop count, and

said measure of the degree to which a node comprises an advantaged node is based on a ratio of a node's neighbors to the average number of its neighbor nodes' neighbors.

Claim 19 The process of claim 17, wherein:

said routing protocol comprises a DSDV protocol and said one or more metrics comprise hop count, and

said step of adjusting one or more of the metrics of a plurality of routing pathways comprises increasing the hop counts of said pathways.

Claim 20 A process for use as part of a routing protocol in an ad hoc digital communications network featuring differentiated services wherein the network is comprised of a plurality of nodes each of which includes a router having multidimensional routing information reflecting different code-point levels and defining

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routing pathways through said network according to code-point and including one or more metrics defining message transfer characteristics for each routing pathway according to code-point, comprising the steps of:

a) exchanging routing information between a plurality of said nodes including routing pathways for each code-point through said network and including one or more metrics defining message transfer costs for each routing pathway;

b) determining if a node comprises an advantaged node which may experience heavy network traffic potentially leading to network congestion;

c) adjusting one or more of the metrics for a plurality of routing pathways through an advantaged node as entered into its routing table by amounts based on the code-point level of the entry to form an updated routing table; and

d) advertising said updated routing table including adjusted metrics across said network for the purpose of updating the routing tables of other nodes in the network.

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Claim 21 The process of claim 20, wherein:

determining if a node comprises an advantaged node includes the step of calculating a ratio of the node's neighbors to the average number of its neighbors' neighbors.

Claim 22 The process of claim 20, wherein:

said routing protocol comprises a DSDV protocol and said one or more metrics comprise hop count, and

said step of adjusting one or more of the metrics for a plurality of routing pathways comprises incrementing the hop counts of said pathways.

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EVIDENCE APPENDIX

None

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RELATED PROCEEDINGS APPENDIX

None